Clopyralid levels in compost drops by 88 percent

WSDA samples compost for herbicide residue for second year

The Washington State Department of Agriculture (WSDA) has completed a second year of sampling compost facilities for residues of clopyralid and picloram. The department is conducting ongoing analyses to evaluate the effectiveness of a year-old clopyralid rule that restricts the pesticide's use on turf and lawns. Pesticide management staff have compared 2002 levels of detected residue to 2001 levels, and found an overall 88 percent decrease of clopyralid in compost. Another chemical of concern is picloram, but no levels of this herbicide were detected in the 2002 samples submitted for residue analysis.

"Establishing a rule that restricts the use of this herbicide on turf and lawns appears to have greatly lowered detectable levels of clopyralid in compost," said WSDA's Cliff Weed.

In December 2002, staff collected and analyzed samples from 12 Washington facilities as compared to samples obtained from nine compost centers the year before. An average of all 34 samples collected in the second year contained 18.47 parts per billion (ppb) of clopyralid. In 2001, an average of all 49 samples collected contained 96.89 ppb. Clopyralid is a broadleaf herbicide that can cause irregular growth symptoms in some plants, such as tomatoes and beans. The herbicide is not considered hazardous to people and other mammals.

With respect to the 2002 samples, grass clippings appear to be the biggest contributor of clopyralid into the organic waste stream. Of all 12 compost centers surveyed by WSDA, Facility #5 East had the highest level of herbicide at 333 ppb. The year before, the same facility and same type feedstock contained 1,550 ppb clopyralid. It is the only location where grass clippings alone were sampled in both years. At all the other compost facilities, samples were taken from mixed yard waste: leaves, twigs, branches, shrubs, garden residues. It should be noted that Facility #5 East is located in a border town, and likely receives grass clippings from lawns outside the state and in communities where a clopyralid prohibition on turf did not exist at the time of sampling.

In addition to the analyses conducted by WSDA's Pesticide Management Division, one sample of compost from each of the 12 facilities was submitted to Washington State University Research Station at Puyallup. There, researchers conducted a greenhouse bioassay by growing peas into a 2:1 ration of compost mixed with peat-based potting mix. Peas grown in the contaminated samples of compost medium were compared to peas grown in clean potting mix. The results of this bioassay ranged from no negative plant growth symptoms (visible) to a "severe" cupping or curling of leaves and stems.

Andy Bary, WSU soil scientist who conducted the assays said, "All the samples submitted for bioassay contained clopyralid levels equal to the levels we've used in our greenhouse and field research; compost containing these levels of herbicide can be used safely to grow sensitive species of plants."

Speaking for Western Washington only, Bary added, "As long as homeowners thoroughly mix compost into the garden and do not exceed the maximum application rates for compost – one-inch thick for yearly applications and up to three inches thick for newly established beds – there is no concern."

WSDA plans to conduct this statewide compost sampling again in 2003. Surveys will take place in subsequent years to monitor levels of clopyralid and other herbicides should those levels become an ongoing concern.

About the sampling process

In 2002, WSDA sampled 12 compost facilities for clopyralid residues, compared to nine facilities sampled in 2001. The majority of the 2002 participants had been sampled in the previous year. To ensure the results of the analyses remained anonymous, facilities were assigned random numbers in both years. (For example, Facility #1 East-2002 is different from Facility #1 East-2001.)

In comparing the data, keep in mind how averages were calculated. Only the positive detections of clopyralid are shown for the samples at each location. These were averaged for each facility, and then the all facilities were averaged together. In 2002, one Westside facility had no detectable level of clopyralid in any of the collected samples, thereby earning an average of *0*. That average, in turn, was calculated into the overall average.

WSDA Compost Sampling December 2002
Clopyralid Analysis Results, Anatek Lab (MDL 1 ppb)

Facility	# Samples	# positive	Results ppb	Average ppb
#1 east	3	2	20,11	15.5
#2 east	3	3	6,5,6	5.7
#3 east	5	4	23,29,22,18	23
#4 east	3	3	17,8,8	11
#5 east	5	5	15,333,20,13,11	78.4
#6 west	2	2	15,2	8.5
#7 west	2	1	11,	11
#8 west	2	2	12,7	9.5
#9 west	3	0	0,	0
#10 west	2	2	5,3	4
#11 west	2	2	6,1	3.5
#12 west	2	1	1	1
Totals	**34**	**27 (79%)**		**14.2**

WSDA Sampling October 2001 Results

Facility	# Samples	# positive	Results ppb	average ppb
#1 east	5	5	200,1550,11,56,477	458.8
#2 east	6	5	18,600,23,29,16	137.2
#3 east	6	3	11,20,66	32.3
#4 east	5	5	35,26,103,43,40	49.4
#5 west	5	2	62,46	54
#6 west	6	5	250,100,24,150,124	129.6
#7 west	3	3	124,33,86	81
#8 west	6	6	12,52,9,27,43,75	36.3
#9 west	7	2	182,25	103.5
Totals	**49**	**36 (73%)**		**120.2**

ppb = parts per billion MDL = minimum detection limit